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TRANSPORT OF DANGEROUS GOODS

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REPORT OF THE COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Addendum 4

Annex 4

Revised Chapter 4.1 of the Model Regulations on the Transport of Dangerous Goods

GE.99- 20945

CHAPTER 4.1

USE OF PACKAGINGS, INCLUDING INTERMEDIATE BULK CONTAINERS (IBCs) AND LARGE PACKAGINGS

Introductory notes

Note 1: Packing groups

Dangerous substances of all classes other than Classes 1, 2, and 7, divisions 5.2 and 6.2 and the self-reactive substances of division 4.1 have for packing purposes been assigned to three packing groups in accordance with the degree of danger they present, i.e.:

Packing group I: Substances presenting high danger;
Packing group II: Substances presenting medium danger ; and
Packing group III: Substances presenting low danger.

The packing group to which a substance is assigned is indicated in the Dangerous Goods List in Chapter 3.2.

Note 2: Explosives, self-reactive substances and organic peroxides

Unless specific provision to the contrary is made in these Regulations, the packagings, including IBCs and large packagings, used for goods of Class 1, self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 shall comply with the provisions for the medium danger group (Packing group II).

4.1.1 General provisions for the packing of dangerous goods, other than goods of Classes 2 or 7 or Division 6.2, in packagings, including IBCs and large packagings

***NOTE**: Some of these general provisions may apply to the packing of goods of Class 2, Division 6.2 and class 7. Refer to sections 4.1.6 (Class 2), 4.1.8 (Division 6.2), 4.1.9 (Class 7) and to the applicable packing instruction in section 4.1.4.*

4.1.1.1 Dangerous goods shall be packed in good quality packagings, including IBCs and large packagings, which shall be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between transport units and/or warehouses as well as any removal from a pallet or overpack for subsequent manual or mechanical handling. Packagings, including IBCs and large packagings, shall be constructed and closed so as to prevent any loss of contents when prepared for transport which might be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure (resulting from altitude, for example). No dangerous residue shall adhere to the outside of packages, IBCs and large packagings during transport. These provisions apply, as appropriate, to new, reused, reconditioned or remanufactured packagings and to new and reused IBCs and large packagings.

4.1.1.2 Parts of packagings, including IBCs and large packagings, which are in direct contact with dangerous goods:

(a) shall not be affected or significantly weakened by those dangerous goods; and

(b) shall not cause a dangerous effect e.g. catalysing a reaction or reacting with the dangerous goods.

Where necessary, they shall be provided with a suitable inner coating or treatment.

4.1.1.3 Unless provided elsewhere in these Regulations, each packaging, including IBCs and large packagings, except inner packagings, shall conform to a design type successfully tested in accordance with the requirements of 6.1.5, 6.5.4 or 6.6.5, respectively.

4.1.1.4 When filling packagings, including IBCs and large packagings, with liquids, sufficient ullage (outage) shall be left to ensure that neither leakage nor permanent distortion of the packaging occurs as a result of an expansion of the liquid caused by temperatures likely to occur during transport. Unless specific requirements are prescribed, liquids shall not completely fill a packaging at a temperature of 55 °C. However, sufficient ullage shall be left in an IBC to ensure that at the mean bulk temperature of 50 °C it is not filled to more than 98% of its water capacity.

4.1.1.4.1 For air transport, packagings intended to contain liquids shall also be capable of withstanding a pressure differential without leakage as specified in the international regulations for air transport.

4.1.1.5 Inner packagings shall be packed in an outer packaging in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the outer packaging. Inner packagings that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials, etc., shall be secured in outer packagings with suitable cushioning material. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material or of the outer packaging.

4.1.1.6 Dangerous goods shall not be packed together in the same outer packaging or in large packagings, with dangerous or other goods if they react dangerously with each other and cause:

(a) combustion and/or evolution of considerable heat;

(b) evolution of flammable, toxic or asphyxiant gases;

(c) the formation of corrosive substances; or

(d) the formation of unstable substances.

4.1.1.7 The closures of packagings containing wetted or diluted substances shall be such that the percentage of liquid (water, solvent or phlegmatizer) does not fall below the prescribed limits during transport.

4.1.1.7.1 Where two or more closure systems are fitted in series on an IBC, that nearest to the substance being carried shall be closed first.

4.1.1.8 Liquids may only be filled into inner packagings which have an appropriate resistance to internal pressure that may be developped under normal conditions of transport. Where pressure may develop in a package by the emission of gas from the contents (as a result of temperature increase or other cause), the packaging may be fitted with a vent, provided that the gas emitted will not cause danger on account of its toxicity, its flammability, the quantity released, etc. The vent shall be so designed that, when the packaging is in the attitude in which it is intended to be transported, leakages of liquid and the penetration of foreign matter are prevented under normal conditions of transport. Venting of the package is not permitted for air transport.

4.1.1.9 New, remanufactured or reused packagings, including IBCs and large packagings, or reconditioned packagings and repaired IBCs shall be capable of passing the tests prescribed in 6.1.5, 6.5.4 or 6.6.5, respectively. Before being filled and handed over for transport, every packaging, including IBCs and large packagings, shall be inspected to ensure that it is free from corrosion, contamination or other damage and every IBC shall be inspected with regard to the proper functioning of any service equipment. Any packaging, which shows signs of reduced strength as compared with the approved design type shall no longer be used or shall be so reconditioned, that it is able to withstand the design type tests. Any IBC which shows signs of reduced strength as compared with the tested design type shall no longer be used or shall be so repaired that it is able to withstand the design type tests.

4.1.1.10 Liquids shall be filled only into packagings, including IBCs, which have an appropriate resistance to the internal pressure that may develop under normal conditions of transport. Packagings and IBCs marked with the hydraulic test pressure prescribed in 6.1.3.1(d) and 6.5.2.2.1, respectively shall be filled only with a liquid having a vapour pressure:

(a) such that the total gauge pressure in the packaging or IBC (i.e. the vapour pressure of the filling substance plus the partial pressure of air or other inert gases, less 100 kPa) at 55°C, determined on the basis of a maximum degree of filling in accordance with 4.1.1.4 and a filling temperature of 15°C, will not exceed two thirds of the marked test pressure; or

(b) at 50°C less than four sevenths of the sum of the marked test pressure plus 100 kPa; or

(c) at 55°C less than two thirds of the sum of the marked test pressure plus 100 kPa.

Metal IBCs intended for the carriage of liquids shall not be used to carry liquids having a vapour pressure of more than 110kPa (1.1 bar) at 50°C or 130kPa (1.3 bar) at 55°C.

EXAMPLES OF REQUIRED MARKED TEST PRESSURES FOR PACKAGINGS, INCLUDING IBCs, CALCULATED AS IN 4.1.1.10 (c)

UN No	Name	Class	Packing group	V_{p55} (kPa)	$V_{p55} \times 1.5$ (kPa)	($V_{p55} \times 1.5$) minus 100 (kPa)	Required minimum test pressure gauge under 6.1.5.5.4.(c) (kPa)	Minimum test pressure (gauge) to be marked on the packaging (kPa)
2056	Tetrahydrofuran	3	II	70	105	5	100	100
2247	n-Decane	3	III	1.4	2.1	-97.9	100	100
1593	Dichloromethane	6.1	III	164	246	146	146	150
1155	Diethyl ether	3	I	100	299	199	199	250

Note 1: *For pure liquids the vapour pressure at 55 °C (V_{p55}) can often be obtained from scientific tables.*

Note 2: *The table refers to the use of 4.1.1.10 (c) only, which means that the marked test pressure shall exceed 1.5 times the vapour pressure at 55 °C less 100 kPa. When, for example, the test pressure for n-decane is determined according to 6.1.5.5.4 (a), the minimum marked test pressure may be lower.*

Note 3: *For diethyl ether the required minimum test pressure under 6.1.5.5.5 is 250 kPa.*

4.1.1.11 Empty packagings, including IBCs and large packagings, that have contained a dangerous substance shall be treated in the same manner as is required by these Regulations for a filled packaging, unless adequate measures have been taken to nullify any hazard.

4.1.1.12 Every packagings, including IBCs, intended to contain liquids shall successfully undergo a suitable leakproofness test, and be capable of meeting the appropriate test level indicated in 6.1.5.4.3, or 6.5.4.7 for the various types of IBCs:

(a) before it is first used for transport;

(b) after remanufacturing or reconditioning of any packaging, before it is re-used for transport;

(c) after the repair of any IBC, before it is re-used for transport.

For this test the packaging, or IBC, need not have its closures fitted. The inner receptacle of a composite packaging or IBC may be tested without the outer packaging, provided the test results are not affected. This test is not necessary for inner packagings of combination packagings or large packagings.

4.1.1.13 Packagings, including IBCs, used for solids which may become liquid at temperatures likely to be encountered during transport shall also be capable of containing the substance in the liquid state.

4.1.1.14 Packagings, including IBCs, used for powdery or granular substances shall be siftproof or shall be provided with a liner.

4.1.1.15 *Use of salvage packagings*

4.1.1.15.1 Damaged, defective or leaking packages, or dangerous goods that have spilled or leaked may be transported in salvage packagings mentioned in 6.1.5.1.11. This does not prevent the use of a bigger size packagings of appropriate type and performance level under the conditions of 4.1.1.15.2.

4.1.1.15.2 Appropriate measures shall be taken to prevent excessive movement of the damaged or leaking packages within a salvage packaging. When the salvage packaging contains liquids, sufficient inert absorbent material shall be added to eliminate the presence of free liquid.

4.1.2 Additional general provisions for the use of IBCs

4.1.2.1 When IBCs are used for the transport of liquids with a flash point of 60.5 °C (closed cup) or lower, or of powders liable to dust explosion, measures shall be taken to prevent a dangerous electrostatic discharge.

4.1.2.2 The periodic testing and inspection requirements for IBCs are provided in Chapter 6.5. An IBC shall not be filled and offered for transport after the date of expiry of the last periodic test required by 6.5.4.14.3, or the date of expiry of the last periodic inspection required by 6.5.1.6.4. However, an IBC filled prior to the date of expiry of the last periodic test or inspection may be transported for a period not to exceed three months beyond the date of expiry of the last periodic test or inspection. In addition, an IBC may be transported after the date of expiry of the last periodic test or inspection:

(a) after emptying but before cleaning, for purposes of performing the required test or inspection prior to refilling; and

(b) unless otherwise approved by the competent authority, for a period not to exceed six months beyond the date of expiry of the last periodic test or inspection in order to allow the return of dangerous goods or residues for proper disposal or recycling. Reference to this exemption shall be entered in the transport document.

4.1.2.3 For rigid plastics IBCs and composite IBCs with plastics inner receptacles, unless otherwise approved by the competent authority, the period of use permitted for the transport of dangerous liquids shall be five years from the date of manufacture of the receptacle except where a shorter period of use is prescribed because of the nature of the liquid to be transported.

4.1.2.4 IBCs of type 31HZ2 shall be filled to at least 80% of the volume of the outer casing and always be carried in closed transport units.

4.1.3 **General provisions concerning packing instructions**

4.1.3.1 Packing instructions applicable to dangerous goods of Classes 1 to 9 are specified in section 4.1.4. They are subdivided in three sub-sections depending on the type of packagings to which they apply:

sub-section 4.1.4.1	for packagings other than IBCs and large packagings; these packing instructions are designated by an alphanumeric code comprising the letter "P";
sub-section 4.1.4.2	for IBCs; these are designated by an alphanumeric code comprising the letters "IBCs";
sub-section 4.1.4.3	for large packagings; these are designated by an alphanumeric code comprising the letters "LP".

Generally, packing instructions specify that the general provisions of 4.1.1, 4.1.2 and/or 4.1.3, as appropriate, are applicable. They may also require compliance with the special provisions of sections 4.1.5, 4.1.6, 4.1.7, 4.1.8 or 4.1.9 when appropriate. Special packing provisions may also be specified in the packing instruction for individual substances or articles. They are also designated by an alphanumeric code comprising the letters:

"PP"	for packagings other than IBCs and large packagings
"B"	for IBCs
"L"	for large packagings.

Unless otherwise specified, each packaging shall conform to the applicable requirements of Part 6. Generally packing instructions do not provide guidance on compatibility and the user should not select a packaging without checking that the substance is compatible with the packaging material selected (e.g. most fluorides are unsuitable for glass receptacles). Where glass receptacles are permitted in the packing instructions porcelain, earthenware and stoneware packagings are also allowed.

4.1.3.2 Column 8 of the dangerous goods list shows for each article or substance the packing instruction(s) that shall be used. Column 9 indicates the special packing provisions applicable to specific substances or articles.

4.1.3.3 Each packing instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, the acceptable outer packagings, inner packagings and when applicable the maximum quantity permitted in each inner or outer packaging, are shown. Maximum net mass and maximum capacity are as defined in 1.2.1.

4.1.3.4 The following packagings shall not be used when the substances being transported are liable to become liquid during transport:

Packagings

Drums:	1D and 1G
Boxes:	4C1, 4C2, 4D, 4F, 4G and 4H1
Bags:	5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2
Composite packagings:	6HC, 6HD2, 6HG1, 6HG2, 6HD1, 6PC, 6PD1, 6PD2, 6PG1, 6PG2 and 6PH1

IBCs

Wooden:	11C, 11D and 11F
Fibreboard:	11G
Flexible:	13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2
Composite:	11HZ2, 21HZ2 and 31HZ2

4.1.3.5 Where the packing instructions in this chapter authorize the use of a particular type of outer packaging in a combination packaging (e.g. 4G), packagings bearing the same packaging identification code followed by the letters "V", "U" or "W" marked in accordance with the requirements of Part 6 (e.g. 4GV, 4GU or 4GW) may also be used under the same conditions and limitations applicable to the use of that type of outer packaging according to the relevant packing instructions. For example, a combination packaging marked with the packaging code "4GV" may be used whenever a combination packaging marked "4G" is authorized, provided the requirements in the relevant packing instruction regarding types of inner packagings and quantity limitations are respected.

4.1.3.6 Gas cylinders and gas receptacles approved by the competent authority are authorized for the transport of any liquid or solid substance assigned to packing instruction P001 or P002 unless otherwise indicated in the packing instruction or by a special provision in column 9 of the Dangerous Goods List. The capacity of gas cylinders shall not exceed 450 litres. The capacity for gas receptacles shall not exceed 1000 litres.

4.1.3.7 Packagings or IBCs not specifically authorized in the applicable packing instruction shall not be used for the transport of a substance or article unless specifically approved by the competent authority and provided:

(a) the alternative packaging complies with the general requirements of this Part;

(b) when the packing instruction indicated in the Dangerous Goods List so specifies, the alternative packaging meets the requirements of Part 6;

(c) the competent authority determines that the alternative packaging provides at least the same level of safety as if the substance were packed in accordance with a method specified in the particular packing instruction indicated in the Dangerous Goods List; and

(d) a copy of the competent authority approval accompanies each consignment or the transport document includes an indication that alternative packaging was approved by the competent authority.

NOTE: *The competent authorities granting such approvals should take action to amend the Model Regulations to include the provisions covered by the approval as appropriate.*

4.1.4 List of packing instructions

4.1.4.1 ***Packing instructions concerning the use of packagings (except IBCs and large packagings)***

P001	**PACKING INSTRUCTION (LIQUIDS)**			**P001**
The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met:				
Combination packagings		**Maximum capacity/Net mass (see 4.1.3.3.)**		
Inner packagings	**Outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass 10 *l* Plastics 30 *l* Metal 40 *l*	**Drums**			
	steel (A2)	250 kg	400 kg	400 kg
	aluminium (1B2)	250 kg	400 kg	400 kg
	other metal (1N2)	250 kg	400 kg	400 kg
	plastics (1H2)	250 kg	400 kg	400 kg
	plywood (1D)	150 kg	400 kg	400 kg
	fibre (1G)	75 kg	400 kg	400 kg
	Boxes			
	steel (4A)	250 kg	400 kg	400 kg
	aluminium (4B)	250 kg	400 kg	400 kg
	natural wood (4C1, 4C2)	150 kg	400 kg	400 kg
	plywood (4D)	150 kg	400 kg	400 kg
	reconstituted wood (4F)	75 kg	400 kg	400 kg
	fibreboard (4G)	75 kg	400 kg	400 kg
	expanded plastics (4H1)	60 kg	60 kg	60 kg
	solid plastics (4H2)	150 kg	400 kg	400 kg
	Jerricans			
	steel (3A2)	120 kg	120 kg	120 kg
	aluminium (3B2)	120 kg	120 kg	120 kg
	plastics (3H2)	120 kg	120 kg	120 kg
Single packagings				
Drums				
steel, non-removable head (1A1)		250 *l*	450 *l*	450 *l*
steel, removable head (1A2)		250 *l* */	450 *l*	450 *l*
aluminium, non-removable head (1B1)		250 *l*	450 *l*	450 *l*
aluminium, removable head (1B2)		250 *l* */	450 *l*	450 *l*
other metal, non-removable head (1N)		250 *l*	450 *l*	450 *l*
other metal, removable head (1N2)		250 *l* */	450 *l*	450 *l*
plastics, non-removable head (1H1)		250 *l* */	450 *l*	450 *l*
plastics, removable head (1H2)		250 *l* */	450 *l*	450 *l*

P001	PACKING INSTRUCTION (LIQUIDS) (cont'd)		P001
	Maximum capacity/Net mass (see 4.1.3.3.)		
Single packagings (cont'd)	**Packing group I**	**Packing group II**	**Packing group III**
Jerricans			
steel, non-removable head (3A1)	60 *l*	60 *l*	60 *l*
steel, removable head (3A2)	60 *l* */	60 *l*	60 *l*
aluminium, non-removable head (3B1)	60 *l*	60 *l*	60 *l*
aluminium, removable head (3B2)	60 *l* */	60 *l*	60 *l*
other metal, non-removable head (1N1)	60 *l*	60 *l*	60 *l*
other metal, removable head (1N2)	60 *l* */	60 *l*	60 *l*
plastics, non-removable head (3H1)	60 *l*	60 *l*	60 *l*
plastics, removable head (3H2)	60 *l* */	60 *l*	60 *l*
Composite packagings			
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)	250 *l*	250 *l*	250 *l*
plastics receptacle in fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)	120 *l*	250 *l*	250 *l*
plastics receptacle in steel or aluminium crate or box or plastic receptacle in wood, plywood, fibreboard or solid plastics box (6HA2,6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	60 *l*	60 *l*	60 *l*
glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or in a steel, aluminium, wood, fibreboard or plywood box (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)	60 *l*	60 *l*	60 *l*

Special packing provisions:

PP1 For UN 1133, UN1210, UN1263 and UN1866, packagings for substances of packing groups II and III in quantities of 5 litres or less per metal or plastics packaging are not required to meet the performance tests in Chapter 6.1 when transported:

(a) in palletized loads, a pallet box or unit load device, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet. For sea transport, the palletized loads, pallet boxes or unit load devices shall be firmly packed and secured in closed cargo transport units;

(b) as an inner packaging of a combination packaging with a maximum net mass of 40 kg.

PP2 For UN 3065 and UN1170, wooden barrels (2C1 and 2C2) may be used.

PP4 For UN 1774, packagings shall meet the packing group II performance level.

PP5 For UN 1204, packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and gas receptacles shall not be used for these substances.

PP6 For UN 1851 and UN 3248, the maximum net quantity per package shall be 5 *l*.

PP10 For UN1791, packing group II, the packaging shall be vented.

PP20 For UN 2217, any siftproof, tearproof receptacle may be used.

PP31 For UN 1131, packagings shall be hermetically sealed.

PP33 For UN 1308, packing groups I and II, only combination packagings with a maximum gross mass of 75 kg are allowed.

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*/ *Only substances with a viscosity more than 200 mm²/s are permitted.*

P002	PACKING INSTRUCTION (SOLIDS)	P002

The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met:

Combination packagings		**Maximum net mass (see 4.1.3.3)**		
Inner packagings	**Outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
	Drums			
Glass 10 kg	steel (1A2)	400 kg	400 kg	400 kg
Plastics 1/ 50 kg	aluminium (1B2)	400 kg	400 kg	400 kg
Metal 50 kg	other metal (1N2)	400 kg	400 kg	400 kg
Paper 1/, 2/, 3/ 50 kg	plastics (1H2)	400 kg	400 kg	400 kg
Fibre 1/, 2/, 3/ 50 kg	plywood (1D)	400 kg	400 kg	400 kg
	fibre (1G)	400 kg	400 kg	400 kg
	Boxes			
1/ *These inner packagings shall be siftproof.*	steel (4A)	400 kg	400 kg	400 kg
	aluminium (4B)	400 kg	400 kg	400 kg
	natural wood (4C1)	250 kg	400 kg	400 kg
	natural wood with sift proof walls (4C2)	250 kg	400 kg	400 kg
2/ *These inner packagings shall not be used when the substances being transported may become liquid during transport.*	plywood (4D)	250 kg	400 kg	400 kg
	reconstituted wood (4F)	125 kg	400 kg	400 kg
	fibreboard (4G)	125 kg	400 kg	400 kg
	expanded plastics (4H1)	60 kg	60 kg	60 kg
	solid plastics (4H2)	250 kg	400 kg	400 kg
3/ *Paper and fibre inner packagings shall not be used for substances of packing group I.*	**Jerricans**			
	steel (3A2)	120 kg	120 kg	120 kg
	aluminium (3B2)	120 kg	120 kg	120 kg
	plastics (3H2)	120 kg	120 kg	120 kg
Single packagings				
Drums				
steel (1A1 or 1A2) 4/		400 kg	400 kg	400 kg
aluminium (1B1 or 1B2) 4/		400 kg	400 kg	400 kg
metal, other than steel, or aluminium (1N1 or 1N2) 4/		400 kg	400 kg	400 kg
plastics (1H1 or 1H2) 4/		400 kg	400 kg	400 kg
fibre (1G) 5/		400 kg	400 kg	400 kg
plywood (1D) 5/		400 kg	400 kg	400 kg
Jerricans				
steel (3A1 or 3A2) 4/		120 kg	120 kg	120 kg
aluminium (3B1 or 3B2) 4/		120 kg	120 kg	120 kg
plastics (3H1 or 3H2) 4/		120 kg	120 kg	120 kg

4/ *These packagings shall not be used for substances of packing group I that may become liquid during transport.*

P002	PACKING INSTRUCTION (SOLIDS) (cont'd)		P002
	Maximum net mass (see 4.1.3.3.)		
Single packagings (cont'd)	**Packing group I**	**Packing group II**	**Packing group III**
Boxes			
steel box (4A)	Not allowed	400 kg	400 kg
aluminium box (4B)	Not allowed	400 kg	400 kg
natural wood box (4C1) 5/	Not allowed	400 kg	400 kg
plywood box (4D) 5/	Not allowed	400 kg	400 kg
reconstituted wood box (4F) 5/	Not allowed	400 kg	400 kg
natural wood with sift proof walls (4C2) 5/	Not allowed	400 kg	400 kg
fibreboard (4G) 5/	Not allowed	400 kg	400 kg
solid plastics (4H2)	Not allowed	400 kg	400 kg
Bags			
bags (5H3, 5H4, 5L3, 5M2) 5/	Not allowed	50 kg	50 kg
Composite packagings:			
plastics receptacle in steel, aluminium, plywood, fibre or plastics drum (6HA1, 6HB1, 6HG1 5/, 6HD1 5/, or 6HH1)	400 kg	400 kg	400 kg
plastics receptacle in steel or aluminium crate or box, wooden box, plywood box, fibreboard box or solid plastics box (6HA2, 6HB2, 6HC, 6HD2 5/, 6HG2 5/ or 6HH2)	75 kg	75 kg	75 kg
glass receptacle in steel, aluminium, plywood or fibre drum (6PA1, 6PB1, 6PD1 5/ or 6PG1 5/ or in steel, aluminium, wood, plywood or fibreboard box: 6PA2, 6PB2, 6PC, 6PD2 5/, or 6PG2 5/ or in solid or expanded plastics packaging: 6PH2 or 6PH15/	75 kg	75 kg	75 kg

5/ *These packagings shall not be used when the substances being transported may become liquid during transport.*

Special packing provisions:

PP6 For UN 3249, the maximum net mass per package shall be 5 kg.

PP7 For UN 2000, celluloid may be transported unpacked on pallets, wrapped in plastic film and secured by appropriate means, such as steel bands as a full load in closed transport units. Each pallet shall not exceed 1000 kg.

PP8 For UN 2002, packagings shall be so constructed that explosion is not possible by reason of increased internal pressure. Gas cylinders and gas receptacles shall not be used for these substances.

PP9 For UN 3175, UN 3243 and UN 3244, packagings shall conform to a design type that has passed a leakproofness test at the packing group II performance level.

PP11 For UN 1309, packing group III, and UN 1362, 5H1, 5L1 and 5M1 bags are allowed if they are overpacked in plastic bags or are wrapped in shrink or stretch wrap on pallets.

PP12 For UN 1361, UN 2213 and UN 3077, 5H1, 5L1 and 5M1 bags are allowed when transported in closed transport units.

PP13 For articles classified under UN 2870, only combination packagings meeting the packing group I performance level are authorized.

PP14 For UN 2211, UN 2698 and UN 3314, packagings are not required to meet the performance tests in Chapter 6.1.

PP15 For UN 1324 and UN 2623, packagings shall meet the packing group III performance level.

PP30 For UN 2471, paper or fibre inner packagings are not permitted.

PP34 For UN 2969 (as whole beans), 5H1, 5L1 and 5M1 bags are permitted.

PP37 For UN 2590 and UN 2212, 5M1 bags are permitted. Packages shall be transported in closed freight containers, in other closed type cargo trnasport units or as stretch or shrink-wrapped unit loads.

PP38 For UN 1309, packing group II, bags are permitted only in closed cargo transport units.

P003	PACKING INSTRUCTION	P003

Dangerous goods shall be placed in suitable outer packagings. The packagings shall meet the provisions of **4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.8 and 4.1.3** and be so designed that they meet the construction requirements of **6.1.4**. Outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use shall be used. Where this packing instruction is used for the transport of articles or inner packagings of combination packagings the packaging shall be designed and constructed to prevent inadvertent discharge of articles during normal conditions of transport.

Special packing provisions:

PP16 For UN 2800, batteries shall be protected from short circuit within the packagings.

PP17 For UN Nos 1950 and 2037, packagings shall not exceed 55kg net mass for fibreboard or 125kg net mass for other packagings.

PP18 For UN 1845, packagings shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings.

PP19 For UN Nos 1327, 1364 and 1365 transport as bales is authorized.

PP20 For UN Nos 1363, 1386, 1408 and 2793 any siftproof, tearproof receptacle may be used.

PP32 UN Nos 2857 and 3358 may be transported unpackaged, in crates or in appropriate overpacks.

P099	PACKING INSTRUCTION	P099

Only packagings which are approved by the competent authority may be used (**see 4.1.3.7**).

P101	PACKING INSTRUCTION	P101

Only packagings which are approved by the competent authority may be used. The State's distinguishing sign for motor vehicles in international traffic of the country for which the authority acts, shall be marked on the transport documents as follows:

"Packaging approved by the competent authority of..."

P110(a)	PACKING INSTRUCTION	P110(a)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics textile, plastic coated or lined rubber textile, rubberized textile	**Intermediate packagings** **Bags** plastics textile, plastic coated or lined rubber textile, rubberized **Receptacles** plastics metal	**Outer packagings** **Drums** steel, removable head (1A2) plastics, removable head (1H2)
Additional requirements: 1. The intermediate packagings shall be filled with water saturated material such as an anti-freeze solution or wetted cushioning. 2. Outer packagings shall be filled with water saturated material such as an anti-freeze solution or wetted cushioning. Outer packagings shall be constructed and sealed to prevent evaporation of the wetting solution, except for UN 0224 when carried dry.		

P110(b)	PACKING INSTRUCTION	P110(b)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Receptacles** metal wood rubber, conductive plastics, conductive **Bags** rubber, conductive plastics, conductive	**Intermediate packagings** **Dividing partitions** metal wood plastics fibreboard	**Outer packagings** **Boxes** natural wood, sift-proof wall (4C2) plywood (4D) reconstituted wood (4F)
Special packing provision: **PP42** For UN Nos. 0074, 0113, 0114, 0129, 0130, 0135 and 0224, the following conditions shall be met: (a) Inner packagings shall not contain more than 50 g of explosive substance (quantity corresponding to dry substance); (b) Compartments between dividing partitions shall not contain more than one inner packaging, firmly fitted; and (c) The outer packaging may be partitioned into up to 25 compartments.		

P111	PACKING INSTRUCTION	P111
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, waterproofed plastics textile, rubberized **Sheets** plastics textile, rubberized	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibreboard (1G) plastics, removable head (1H2)
Special packing provision: **PP43** For UN 0159, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packagings.		

P112(a)	PACKING INSTRUCTION (Solid wetted, 1.1D)	P112(a)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, multiwall, water resistant plastics textile textile, rubberized woven plastics **Receptacles** metal plastics	**Intermediate packagings** **Bags** plastics textile, plastic coated or lined **Receptacles** metal plastics	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)
Additional requirement: Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.		
Special packing provisions: **PP26** For UN Nos. 0004, 0076, 0078, 0154, 0219 and 0394, packagings shall be lead free. **PP45** For UN 0072 and UN 0226, intermediate packagings are not required.		

P112(b)	**PACKING INSTRUCTION (Solid dry, other than powder 1.1D)**	P112(b)

The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.

Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags paper, kraft paper, multiwall, water resistant plastics textile textile, rubberized woven plastics	**Bags** (for UN 0150 only) pastics textile, plastic coated or lined	**Bags** woven plastics, sift-proof (5H2) woven plastics, water-resistant (5H3) plastics, film (5H4) textile, sift-proof (5L2) textile, water resistant (5L3) paper, multiwall, water resistant (5M2) **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

Special packing provisions:

PP26 For UN Nos. 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings shall be lead free.

PP46 For UN 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.

PP47 For UN 0222 and UN 0223, inner packagings are not required when the outer packaging is a bag.

P112(c)	PACKING INSTRUCTION (Solid dry powder 1.1D)	P112(c)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, multiwall, water resistant plastics woven plastics **Receptacles** fibreboard metal plastics wood	**Intermediate packagings** **Bags** paper, multiwall, water resistant with inner lining plastics **Receptacles** metal plastics	**Outer packagings** **Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)
Additional requirements: 1. Inner packagings are not required if drums are used as the outer packaging. 2. The packaging shall be sift-proof.		
Special packing provision: **PP26** For UN Nos. 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings shall be lead free. **PP46** For UN 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg. **PP48** For UN 0504, metal packagings shall not be used.		

P113	PACKING INSTRUCTION	P113
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper plastics textile, rubberized **Receptacles** fibreboard metal plastics wood	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)
Additional requirement: The packaging shall be sift-proof.		
Special packing provisions: **PP49** For UN 0094 and UN 0305, no more than 50 g of substance shall be packed in an inner packaging. **PP50** For UN 0027, inner packagings are not necessary when drums are used as the outer packaging. **PP51** For UN 0028, paper kraft or waxed paper sheets may be used as inner packagings.		

P114(a)	PACKING INSTRUCTION (Solid wetted)	P114(a)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics textile woven plastics **Receptacles** metal plastics	**Intermediate packagings** **Bags** plastics textile, plastic coated or lined **Receptacles** metal plastics	**Outer packagings** **Boxes** steel (4A) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Additional requirement: Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.		
Special packing provisions: **PP26** For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings shall be lead free. **PP43** For UN 0342, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packagings.		

P114(b)	**PACKING INSTRUCTION (Solid dry)**	P114(b)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, kraft plastics textile, sift-proof woven plastics, sift-proof **Receptacles** fibreboard metal paper plastics woven plastics, sift-proof	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Special packing provisions: **PP26** For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings shall be lead free. **PP50** For UN 0160 and UN 0161, inner packagings are not required if drums are used as the outer packaging. **PP52** For UN 0160 and UN 0161, when metal drums (1A2 or 1B2) are used as the outer packaging, metal packagings shall be so constructed that the risk of explosion, by reason of increase internal pressure from internal or external causes is prevented.		

P115	PACKING INSTRUCTION	P115
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Receptacles** plastics	**Intermediate packagings** **Bags** plastics in metal receptacles **Drums** metal	**Outer packagings** **Boxes** natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G)

Special packing provisions:

PP45 For UN 0144, intermediate packagings are not required.

PP53 For UN Nos. 0075, 0143, 0495 and 0497, when boxes are used as the outer packaging, inner packagings shall have taped screw cap closures and be not more than 5 litres capacity each. Inner packagings shall be surrounded with non-combustible absorbent cushioning materials. The amount of absorbent cushioning material shall be sufficient to absorb the liquid contents. Metal receptacles shall be cushioned from each other. Net mass of propellant is a limited to 30 kg for each package when outer packagings are boxes.

PP54 For UN Nos. 0075, 0143, 0495 and 0497, when drums are used as the outer packaging and when intermediate packagings are drums, they shall be surrounded with non-combustible cushioning material in a quantity sufficient to absorb the liquid contents. A composite packaging consisting of a plastic receptacle in a metal drum may be used instead of the inner and intermediate packagings. The net volume of propellent in each package shall not exceed 120 litres.

PP55 For UN 0144, absorbent cushioning material shall be inserted.

PP56 For UN 0144, metal receptacles may be used as inner packagings.

PP57 For UN Nos.0075, 0143, 0495 and 0497, bags shall be used as intermediate packagings when boxes are used as outer packagings.

PP58 For UN Nos. 0075, 0143, 0495 and 0497, drums shall be used as intermediate packagings when drums are used as outer packagings.

PP59 For UN 0144, fibreboard boxes (4G) may be used as outer packagings.

PP60 For UN 0144, aluminium drums, removable head (1B2) shall not be used.

P116	PACKING INSTRUCTION	P116
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, water and oil resistant plastics textile, plastic coated or lined woven plastics, sift-proof **Receptacles** fibreboard, water resistant metal plastics wood, sift-proof **Sheets** paper, water resistant paper, waxed plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Bags** woven plastics (5H1) paper, multiwall, water resistant (5M2) plastics, film (5H4) textile, sift-proof (5L2) textile, water resistant (5L3) **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2) **Jerricans** steel, removable head (3A2) plastics, removable head (3H2)
Special packing provisions: **PP61** For UN Nos. 0082, 0241, 0331 and 0332, inner packagings are not required if leakproof removable head drums are used as the outer packaging. **PP62** For UN Nos. 0082, 0241, 0331 and 0332, inner packagings are not required when the explosive is contained in a material impervious to liquid. **PP63** For UN 0081, inner packagings are not required when contained in rigid plastic which is impervious to nitric esters. **PP64** For UN 0331, inner packagings are not required when bags (5H2), (5H3) or (5H4) are used as outer packagings. **PP65** For UN Nos. 0082, 0241, 0331 and 0332, bags (5H2 or 5H3) may be used as outer packagings. **PP66** For UN 0081, bags shall not be used as outer packagings.		

P130	PACKING INSTRUCTION	P130
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Not necessary	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

Special packing provision:

PP67 The following applies to UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488, 0501 and 502: Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling devices.

P131	PACKING INSTRUCTION	P131
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags paper plastics **Receptacles** fibreboard metal plastics wood **Reels**	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)
Special packing provision: **PP68** For UN Nos. 0029, 0267 and 0455, bags and reels shall not be used as inner packagings.		

P132(a)	PACKING INSTRUCTION	P132(a)
(Articles consisting of closed metal, plastics or fibreboard casings that contain a detonating explosive, or consisting of plastics-bonded detonating explosives)		
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Not necessary	Not necessary	**Boxes** steel (4A) aluminium (4B) wood, natural, ordinary (4C1) wood, natural, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)

P132(b)	PACKING INSTRUCTION (Articles without closed casings)	P132(b)
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Receptacles** fibreboard metal plastics **Sheets** paper plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)

P133	PACKING INSTRUCTION	P133
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Receptacles** fibreboard metal plastics wood **Trays, fitted with dividing partitions** fibreboard plastics wood	**Intermediate packagings** **Receptacles** fibreboard metal plastics wood	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2)
Additional requirement: Receptacles are only required as intermediate packagings when the inner packagings are trays.		
Special packing provision: **PP69** For UN Nos. 0043, 0212, 0225, 0268 and 0306, trays shall not be used as inner packagings.		

P134	PACKING INSTRUCTION	P134
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags water resistant **Receptacles** fibreboard metal plastics wood **Sheets** fibreboard, corrugated **Tubes** fibreboard	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2)

P135	PACKING INSTRUCTION	P135
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags paper plastics **Receptacles** fibreboard metal plastics wood **Sheets** paper plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, expanded (4H1) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P136	PACKING INSTRUCTION	P136
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics textile **Boxes** fibreboard plastics wood	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)
Additional requirement: Dividing partitions in the outer packagings.		

P137	PACKING INSTRUCTION	P137
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags plastics **Boxes** fibreboard **Tubes** fibreboard metal plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Additional requirement: Dividing partitions in the outer packagings.		
Special packing provision: **PP70** For UN Nos. 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity shall face downwards and the package marked "THIS SIDE UP". When the shaped charges are packed in pairs, the conical cavities shall face inwards to minimize the jetting effect in the event of accidental initiation.		

P138	PACKING INSTRUCTION	P138
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2)
Additional requirement: If the ends of the articles are sealed, inner packagings are not necessary.		

P139	PACKING INSTRUCTION	P139
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics **Receptacles** fibreboard metal plastics wood **Reels** **Sheets** paper plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Special packing provisions: **PP71** For UN Nos. 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord shall be sealed, for example, by a plug firmly fixed so that the explosive cannot escape. The ends of flexible detonating cord shall be fastened securely. **PP72** For UN 0065 and UN 0289, inner packagings are not required when they are in coils.		

P140	PACKING INSTRUCTION	P140
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** plastics **Reels** **Sheets** paper, kraft plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G)
Special packing provisions: **PP73** For UN 0105, no inner packagings are required if the ends are sealed. **PP74** For UN 0101, the packaging shall be sift-proof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps. **PP75** For UN 0101, steel or aluminium boxes or drums shall not be used.		

P141	PACKING INSTRUCTION	P141
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Receptacles** fibreboard metal plastics wood **Trays, fitted with dividing partitions** plastics wood **Dividing partitions in the outer packagings**	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P142	PACKING INSTRUCTION	P142
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper plastics **Receptacles** fibreboard metal plastics wood **Sheets** paper **Trays, fitted with dividing partitions** plastics	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) fibre (1G) plastics, removable head (1H2)

P143	PACKING INSTRUCTION	P143
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings **Bags** paper, kraft plastics textile textile, rubberized **Receptacles** fibreboard metal plastics **Trays, fitted with dividing partitions** plastics wood	**Intermediate packagings** Not necessary	**Outer packagings** **Boxes** steel (4A) aluminium (4B) natural wood, ordinary (4C1) natural wood, sift-proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) plastics, solid (4H2) **Drums** steel, removable head (1A2) aluminium, removable head (1B2) plywood (1D) fibre (1G) plastics, removable head (1H2)
Additional requirement: Instead of the above inner and outer packagings, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.		
Special packing provisions: **PP76** For UN Nos. 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings shall be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes is prevented.		

P144	PACKING INSTRUCTION	P144
The following packagings are authorized, provided the general packing provisions of **4.1.1**, **4.1.3** and special packing provisions of **4.1.5** are met.		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Receptacles fibreboard metal plastics	Not necessary	**Boxes** steel (4A) aluminium (4B) natural wood, ordinary with metal liner (4C1) plywood (4D) with metal liner reconstituted wood with metal liner (4F) plastics, expanded (4H1)
Additional requirement: Dividing partitions in the outer packagings.		
Special packing provision: **PP 77** UN 0248 and UN 0249, packagings shall be protected against the ingress of water. When water-activated contrivances are transported unpackaged, they shall be provided with at least two independent protective features which prevent the ingress of water.		

P200	PACKING INSTRUCTION	P200
Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority are authorized. Cylinders and receptacles with capacities of 1 litre or less shall be packed in outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport.		
Special packing provisions: **PP23** For UN 1001, cylinders shall be filled with a homogenous monolithic porous mass and contain an adequate quantity of acetone or other equally suitable solvent.		

P201	PACKING INSTRUCTION	P201
This instruction applies to UN 3167, UN 3168 and UN 3169.		
The following packagings are authorized: (1) Compressed gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the competent authority. (2) For non-toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 5 litres per package which meet the packing group III performance level. (3) For toxic gases, combination packagings with hermetically sealed inner packagings of glass or metal with a maximum capacity of 1 litre per package which meet the packing group III performance level.		

P202	PACKING INSTRUCTION	P202
This instruction applies to UN 3353.		
The following packagings are authorized: Packagings conforming to the packing group III performance level. Air bag inflators or modules or seat belts pretensioners may be carried unpackaged in dedicated handling devices, vehicles or closed transport unit when moved from where they are manufactured to an assembly plant.		
Additional requirements: 1. The packaging shall be designed and constructed to prevent inadvertent operation during normal conditions of transport. 2. The pressure vessel shall be in accordance with the requirements of the competent authority for the gas(es)contained in the pressure vessel.		

P300	PACKING INSTRUCTION	P300
This instruction applies to UN 3064.		
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met: Combination packagings consisting of inner metal cans of not more than 1 litre capacity each and outer wooden boxes (4C1, 4C2, 4D or 4F) containing not more than 5 litres of solution.		
Additional requirements: 1. Metal cans shall be completely surrounded with absorbent cushioning material. 2. Wooden boxes shall be completely lined with suitable material impervious to water and nitroglycerin.		

P301	PACKING INSTRUCTION	P301
This instruction applies to UN 3165.		
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met: (1) Aluminium pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel shall consist of a welded aluminium bladder having a maximum internal volume of 46 litres. The outer vessel shall have a minimum design gauge pressure of 1,275 kPa and a minimum burst gauge pressure of 2,755 kPa. Each vessel shall be leak checked during manufacture and before shipment and shall be found leakproof. The complete inner unit shall be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 litres. (2) Aluminium pressure vessel. Primary containment of the fuel within this vessel shall consist of a welded vapour tight fuel compartment with an elastomeric bladder having a maximum internal volume of 46 litres. The pressure vessel shall have a minimum design gauge pressure of 5,170 kPa. Each vessel shall be leak-checked during manufacture and before shipment and shall be securely packed in non-combustible cushioning material such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42 litres.		

P302	PACKING INSTRUCTION	P302

This instruction applies to UN 3269.

The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met:

Combination packagings which meet the packing group II or III performance level according to the criteria for class 3, applied to the base material.
The base material and the activator (organic peroxide) shall be each separately packed in inner packagings.
The components may be placed in the same outer packaging provided they will not interact dangerously in the event of a leakage.
The activator shall have a maximum quantity of 125 ml per inner packaging if liquid, and 500 grams per inner packaging if solid.

P400	PACKING INSTRUCTION	P400

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 1000 kPa conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

(2) Boxes (4A, 4B, 4C1, 4C2, 4D, 4F or 4G), drums (1A2, 1B2, 1N2, 1D or 1G) or jerricans (3A2 or 3B2) enclosing hermetically sealed metal cans with inner packagings of glass or metal, with a capacity of not more than 1 litre each, having threaded closures with gaskets. Inner packagings shall be cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents. Inner packagings shall not be filled to more than 90% of their capacity. Outer packagings shall have a maximum net mass of 125 kg.

(3) Steel, aluminium or metal drums (1A2, 1B2 or 1N2), jerricans (3A2 or 3B2) or boxes (4A or 4B) with a maximum net mass of 150 kg each with hermetically sealed inner metal cans not more than 4 litre capacity each, with threaded closures fitted with gaskets. Inner packagings shall be cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents. Each layer of inner packagings shall be separated by a dividing partition in addition to cushioning material. Inner packagings shall not be filled to more than 90% of their capacity.

P401	PACKING INSTRUCTION	P401

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 4 bar conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

	Inner packaging	**Outer packaging**
(2) Combination packagings with inner packagings of glass metal or plastics which have threaded closures surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents.	1 *l*	30 kg maximum net mass

(3) Steel drums (1A1) with a maximum capacity of 250 litres.

P402	PACKING INSTRUCTION	P402

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Steel gas cylinders and gas receptacles having a minimum design pressure of 4 bar conforming to the construction, testing and filling requirements approved by the competent authority. Valves shall be protected with steel valve protection caps or collars or the gas cylinders or receptacles shall be overpacked in strong wood, fibreboard or plastics boxes. Cylinders and gas receptacles shall be secured to prevent movement in the box and shall be packaged and transported so that pressure relief devices remain in the vapour space of the cylinder during normal conditions of handling and transport. Filling shall not be greater than 90% of the capacity of the cylinder.

	Inner packaging	**Outer packaging**
	maximum net mass	
(2) Combination packagings with inner packagings of glass, metal or plastics which have threaded closures surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents.	10 kg (glass) 15 kg (metal or plastics)	125 kg 125 kg

(3) Steel drums (1A1) with a maximum capacity of 250 litres.

(4) Composite packagings consisting of plastics receptacle in a steel or aluminium drum (6HA1 or 6HB1) with a maximum capacity of 250 litres.

P403	PACKING INSTRUCTION	P403
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings		
Inner packagings Glass 2 kg Plastic 15 kg Metal 20 kg Inner packagings shall have threaded closures	**Drums**	**Maximum net mass**
	steel (1A2)	400 kg
	aluminium (1B2)	400 kg
	other metal (1N2)	400 kg
	plastics (1H2)	400 kg
	plywood (1D)	400 kg
	fibre (1G)	400 kg
	Boxes	
	steel (4A)	400 kg
	aluminium (4B)	400 kg
	natural wood (4C1)	250 kg
	natural wood with sift proof walls (4C2)	250 kg
	plywood (4D)	250 kg
	reconstituted wood (4F)	125 kg
	fibreboard (4G)	125 kg
	expanded plastics (4H1)	60 kg
	solid plastics (4H2)	250 kg
	Jerricans	
	steel (3A2)	120 kg
	aluminium (3B2)	120 kg
	plastics (3H2)	120 kg
Single packagings		**Maximum net mass**
Drums		
steel(1A1, 1A2)		250 kg
aluminium (1B1, 1B2)		250 kg
metal other than steel or aluminium (1N1, 1N2)		250 kg
plastics (1H1, 1H2)		250 kg
Jerricans		
steel (3A1, 3A2)		120 kg
aluminium (3B1, 3B2)		120 kg
plastics (3H1, 3H2)		120 kg
Composite packagings		
Plastics receptacle in steel or aluminium drums (6HA1 or 6HB1)		250 kg
Plastics receptacle in fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1)		75 kg
Plastics receptacle in steel, aluminium, wood, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		75 kg

P404	PACKING INSTRUCTION	P404

This instruction applies to pyrophoric solids: UN Nos: 1370, 1383, 1854, 1855, 2005, 2008, 2545, 2546, 2846, 2881, 3052, 3200, 3203.

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Combination packagings

Outer packagings: (1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F or 4H2)

Inner packagings: Metal packagings with a capacity of not more than 15kg each.
Inner packagings shall be hermetically sealed and have threaded closures.

(2) Metal packagings: (1A1, 1A2, 1B1, 1N1, 1N2, 3A1, 3A2, 3B1 and 3B2)
Maximum gross mass: 150kg

(3) Composite packagings: Plastics receptacle in a steel or aluminium drum (6HA1 or 6HB1)
Maximum gross mass: 150kg

P405	PACKING INSTRUCTION	P405

This instruction applies to UN 1381.

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) For UN1381, phosphorus wet:

(a) Combination packagings

Outer packagings: (4A, 4B, 4C1, 4C2, 4D or 4F)
Maximum net mass: 75kg

Inner packagings:

(i) hermetically sealed metal cans, with a maximum net mass of 15kg; or

(ii) glass inner packagings cushioned on all sides with dry, absorbent, non-combustible material in a quantity sufficient to absorb the entire contents with a maximum net mass of 2 kg; or

(b) Drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2); maximum net mass: 400 kg
Jerricans (3A1 or 3B1); maximum net mass: 120kg.

These packagings shall be capable of passing the leakproofness test specified in 6.1.5.4 at the packing group II performance level.

(2) For UN1381, dry phosphorus:

(a) When fused, drums (1A2, 1B2 or 1N2) with a maximum net mass of 400 kg; or

(b) In projectiles or hard cased articles when transported without Class 1 components as specified by the competent authority.

P406	PACKING INSTRUCTION	P406

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Combination packagings

outer packagings: (4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2, 1G, 1D, 1H2 or 3H2)

inner packagings: water-resistant packagings.

(2) Plastics, plywood or fibreboard drums (1H2, 1D or 1G) or boxes (4A, 4B, 4C1, 4D, 4F, 4C2 4G and 4H2) with a water resistant inner bag, plastics film lining or water resistant coating

(3) Metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2), plastics drums (1H1 or 1H2), metal jerricans (3A1, 3A2, 3B1 or 3B2), plastics jerricans (3H1 or 3H2), plastics receptacle in steel or aluminium drums (6HA1 or 6HB1), plastics receptacle in fibre, plastics or plywood drums (6HG1, 6HH1 or 6HD1), plastics receptacle in steel, aluminium, wood, plywood, fibreboard or solid plastics boxes (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2).

Additional requirements:

1. Packagings shall be designed and constructed to prevent the loss of water or alcohol content or the content of the phlegmatizer.
2. Packagings shall be so constructed and closed so as to avoid an explosive over pressure or pressure build-up of more than 300 kPa (3 bar).
3. The type of packaging and maximum permitted quantity per packaging are limited by the provisions of 2.1.3.5.

Special packing provisions:

PP24 UN 2852 shall not be transported in quantities of more than 500 g per package.

PP25 UN 1347 shall not be transported in quantities of more than 15 kg per package.

PP26 For UN Nos 1310, 1320, 1321, 1322, 1344, 1347, 1348, 1349, 1517, 2907, 3317 and 3344 packagings shall be lead free.

P407	PACKING INSTRUCTION	P407
This instruction applies to UN Nos 1331, 1944, 1945 and 2254.		
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met: Combination packagings comprising securely closed inner packagings to prevent accidental ignition under normal conditions of transport. The maximum net mass of the outer packagings shall not exceed 45 kg except for fibreboard boxes which shall not exceed 30 kg.		
Additional requirement: Matches shall be tightly packed.		
Special packing provision: **PP27** UN 1331, Strike-anywhere matches shall not be packed in the same outer packaging with any other dangerous goods other than safety matches or wax Vesta matches, which shall be packed in separate inner packagings. Inner packagings shall not contain more than 700 strike-anywhere matches.		

P408	PACKING INSTRUCTION	P408
This instruction applies to UN 3292.		
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met: (1) For cells: Outer packagings with sufficient cushioning material to prevent contact between cells and between cells and the internal surfaces of the outer packaging and to ensure that no dangerous movement of the cells within the outer packaging occurs in transport. Packagings shall conform to the packing group II performance level. (2) For batteries: Batteries may be carried unpacked or in protective enclosures (e.g. in fully enclosed or wooden slatted crates). The terminals shall not support the weight of other batteries or materials packed with the batteries.		
Additional requirement: Batteries shall be protected against short circuit and shall be isolated in such a manner as to prevent short circuits.		

P409	PACKING INSTRUCTION	P409

This instruction applies to UN Nos 2956, 3242 and 3251.

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Fibre drum (1G) which may be fitted with a liner or coating; maximum net mass: 50kg

(2) Combination packagings: Fibreboard box (4G) with a single inner plastic bag; maximum net mass 50kg

(3) Combination packagings: Fibreboard box (4G) or fibre drum (1G) with inner plastic packagings each containing a maximum of 5 kg; maximum net mass: 25kg

P410	PACKING INSTRUCTION	P410

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

Combination packagings

Inner packagings		Outer packagings	Maximum net mass	
			Packing group II	Packing group III
Glass	10 kg	**Drums**		
Plastics 1/	30 kg	steel (1A2)	400 kg	400 kg
Metal	40 kg	aluminium (1B2)	400 kg	400 kg
Paper 1/ 2/	10 kg	other metal (1N2)	400 kg	400 kg
Fibre 1/ 2/	10 kg	plastics (1H2)	400 kg	400 kg
		plywood (1D)	400 kg	400 kg
		fibre (1G) 1/	400 kg	400 kg
1/ *Packagings shall be siftproof.*		**Boxes**		
2/ *These inner packagings shall not be used when the substances being transported may become liquid during transport.*		steel (4A)	400 kg	400 kg
		aluminium (4B)	400 kg	400 kg
		natural wood (4C1)	400 kg	400 kg
		natural wood with sift proof walls (4C2)	400 kg	400 kg
		plywood (4D)	400 kg	400 kg
		reconstituted wood (4F)	400 kg	400 kg
		fibreboard (4G) 1/	400 kg	400 kg
		expanded plastics (4H1)	60 kg	60 kg
		solid plastics (4H2)	400 kg	400 kg
		Jerricans		
		steel (3A2)	120 kg	120 kg
		aluminium (3B2)	120 kg	120 kg
		plastics (3H2)	120 kg	120 kg

Single packagings		
Drums		
steel (1A1 or 1A2)	400 kg	400 kg
aluminium (1B1 or 1B2)	400 kg	400 kg
metal other than steel, or aluminium (1N1 or 1N2)	400 kg	400 kg
plastics (1H1 or 1H2)	400 kg	400 kg
Jerricans		
steel (3A1 or 3A2)	120 kg	120 kg
aluminium (3B1 or 3B2)	120 kg	120 kg
plastics (3H1 or 3H2)	120 kg	120 kg

P410	PACKING INSTRUCTION (cont'd)	P410
Single packagings (cont'd)	**Packing group II**	**Packing group III**
Boxes		
steel (4A)	400 kg	400 kg
aluminium (4B)	400 kg	400 kg
natural wood (4C1) 3/	400 kg	400 kg
plywood (4D)3/	400 kg	400 kg
reconstituted wood (4F)3/	400 kg	400 kg
natural wood with sift proof walls (4C2)	400 kg	400 kg
fibreboard (4G) 3/	400 kg	400 kg
solid plastics (4H2)	400 kg	400 kg
Bags		
Bags (5H3, 5H4, 5L3, 5M2) 3/ 4/	50 kg	50 kg
Composite packaging		
plastics receptacle in steel, aluminium, plywood, fibre or plastics drum (6HA1, 6HB1, 6HG1, 6HD1, or 6HH1)	400 kg	400 kg
plastics receptacle in steel or aluminium crate or box, wooden box, plywood box, fibreboard box or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	75 kg	75 kg
glass receptacle in steel, aluminium, plywood or fibre drum (6PA1, 6PB1, 6PD1 or 6PG1) or in steel, aluminium, wood, plywood or fibreboard box (6PA2, 6PB2, 6PC, 6PD2, or 6PG2) or in solid or expanded plastics packaging (6PH1 or 6PH2)	75 kg	75 kg

3/ *These packagings shall not be used when the substances being transported may become liquid during transport.*

4/ *These packagings shall only be used for packing group II substances when transported in a closed transport unit.*

Special packing provisions:

PP 39 For UN 1378, for metal packagings a venting device is required.

PP 40 For UN Nos 1326, 1352, 1358, 1437 and 1871, and for UN 3182, packing group II, bags are not allowed.

P411	PACKING INSTRUCTION	P411

This instruction applies to UN 3270.

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

(1) Fibreboard box with a maximum gross mass of 30kg;

(2) Other packagings, provided that explosion is not possible by reason of increased internal pressure. Maximum net mass shall not exceed 30kg.

P500	PACKING INSTRUCTION	P500
This instruction applies to UN 3356.		
The general provisions of **4.1.1** and **4.1.3** are met. Packagings shall conform to the packing group II performance level. The generator(s) shall be transported in a package which meets the following requirements when one generator in the package is actuated: (a) Other generators in the package will not be actuated; (b) Packaging material will not ignite; and (c) The outside surface temperature of the completed package shall not exceed 100°C.		

P501	PACKING INSTRUCTION	P501

This instruction applies to UN 2015.

The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:

Combination packagings	**Inner packaging maximum capacity**	**Outer packaging maximum net mass**
(1) Boxes (4A, 4B, 4C1, 4C2, 4D, 4H2) or drums (1A2, 1B2, 1N2, 1H2, 1D) or jerricans (3A2, 3B2, 3N2, 3H2) with glass, plastics or metal inner packagings	5 *l*	125 kg
(2) Fibreboard box (4G) or fibre drum (1G), with plastics or metal inner packagings each in a plastics bag	2 *l*	50 kg

Single packagings	**Maximum capacity**
Drums	
steel (1A1)	250 *l*
aluminum (1B1)	
metal other than steel or aluminium (1N1)	
plastics (1H1)	
Jerricans	
steel (3A1)	60 *l*
aluminum (3B1)	
metal other than steel or aluminium (3N1)	
plastics (3H1)	
Composite packagings	
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)	250 *l*
plastics receptacle in fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)	250 *l*
plastics receptacle in steel or aluminium crate or box	60 *l*
or plastic receptacle in wood, plywood, fibreboard	
or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)	60 *l*
glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2)	
or in a steel, aluminium, wood, fibreboard or plywood box (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)	

Additional requirements:

1. Packagings shall have a minimum ullage of 10%.
2. Packagings shall be vented.

P502	PACKING INSTRUCTION	P502
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings		**Maximum net mass**
Inner packagings Glass 5 *l* Metal 5 *l* Plastic 5 *l*	**Drums** steel (1A2) aluminium (1B2) other metal (1N2) plastics (1H2) plywood (1D) fibre (1G)	125 kg 125 kg 125 kg 125 kg 125 kg 125 kg
	Boxes steel (4A) aluminium (4B) natural wood (4C1) natural wood with sift proof walls (4C2) plywood (4D) reconstituted wood (4F) fibreboard (4G) expanded plastics (4H1) solid plastics (4H2)	125 kg 125 kg 125 kg 125 kg 125 kg 125 kg 125 kg 60 kg 125 kg
Single packagings		**Maximum capacity**
Drums steel (1A1) aluminum (1B1) plastics (1H1)		250 *l*
Jerricans steels (3A1) aluminum (3B1) metal other than steel or aluminium (3N1) plastics (3H1)		60 *l*
Composite packagings		
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)		250 *l*
plastics receptacle in fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)		250 *l*
plastics receptacle in steel or aluminium crate or box or plastics receptacle in wood, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		60 *l*
glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or in a steel, aluminium, wood, fibreboard or plywood box (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)		60 *l*
Special packing provision: **PP28** For UN 1873, only glass inner packagings are authorized for combination packagings.		

P503	PACKING INSTRUCTION	P503
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings		**Maximum net mass**
Inner packagings:	**Drums**	
	steel (1A2)	125kg
C'ass 5 kg.	aluminium (1B2)	125kg
Metal 5 kg	other metal (1N2)	125kg
Plastic 5 kg	plastics (1H2)	125kg
	plywood (1D)	125kg
	fibre (1G)	125kg
	Boxes	
	steel (4A)	125 kg
	aluminium (4B)	125 kg
	natural wood (4C1)	125 kg
	natural wood with sift proof walls (4C2)	125 kg
	plywood (4D)	125 kg
	reconstituted wood (4F)	125 kg
	fibreboard (4G)	40 kg
	expanded plastics (4H1)	60 kg
	solid plastics (4H2)	125 kg
Single packagings		
Metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) with a maximum net mass of 250 kg.		
Fibreboard (1G) or plywood drums (1D) fitted with inner liners with a maximum net mass of 200 kg.		

P504	PACKING INSTRUCTION	P504
The following packagings are authorized, provided that the general provisions of **4.1.1** and **4.1.3** are met:		
Combination packagings		**Maximum net mass**
(1)	Outer packagings: (1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2) Inner packagings: Glass receptacles with a maximum capacity of 5 litres	75 kg
(2)	Outer packagings: Plastic receptacles with a maximum capacity of 30 litres in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2	75 kg
(3)	Metal receptacles with a maximum capacity of 40 litres in 1G, 4F or 4G	125 kg
(4)	Metal receptacles with a maximum capacity of 40 litres in 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4H2 outer packagings	225 kg
Single packagings		**Maximum capacity**
Drums		
steel, non-removable head (1A1)		250 *l*
aluminium, non-removable head (1B1)		250 *l*
other metal, non-removable head (1N1)		250 *l*
plastics, non-removable head (1H1)		250 *l*
Jerricans		
steel non-removable head (3A1)		60 *l*
aluminium non-removable head (3B1)		60 *l*
plastics non-removable head (3H1)		60 *l*
Composite packagings		
plastics receptacle in steel or aluminium drum (6HA1, 6HB1)		250 *l*
plastics receptacle in fibre, plastics or plywood drum (6HG1, 6HH1, 6HD1)		120 *l*
plastics receptacle in steel or aluminium crate or box or plastic receptacle in wood, plywood, fibreboard or solid plastics box (6HA2, 6HB2, 6HC, 6HD2, 6HG2 or 6HH2)		60 l
glass receptacle in steel, aluminium, fibre, plywood, solid plastics or expanded plastics drum (6PA1, 6PB1, 6PG1, 6PD1, 6PH1 or 6PH2) or in a steel, aluminium, wood, fibreboard or plywood box (6PA2, 6PB2, 6PC, 6PG2 or 6PD2)		60 *l*
Special packing provision:		
PP29 For UN 2014, minimum ullage shall be 10%.		

P520 **PACKING INSTRUCTION** **P520**

This instruction applies to organic peroxices of division 5.2 and self-reactive substances of division 4.1

The packagings listed below are authorized provided the general provision of **4.1.1** and **4.1.3** and special provisions of 4.1.7 are met.

The packing methods are designated OP1 to OP8. The packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 4.1.7.1.3 and 2.4.2.3.2.4. and 2.5.3.2.4. The quantities specified for each packing method are the maximum quantities authorized per package. The following packagings are authorized:

(1) Combination packagings with outer packagings comprising boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2), drums (1A2, 1B2, 1G, 1H2 and 1D) jerricans (3A2, 3B2 and 3H2);

(2) Single packagings consisting of drums (1A1, 1A2, 1B1, 1B2, 1G, 1H1, 1H2 and 1D) and jerricans (3A1, 3A2, 3B1, 3B2, 3H1 and 3H2);

(3) Composite packagings with plastics inner receptacles (6HA1, 6HA2, 6HB1, 6HB2, 6HC, 6HD1, 6HD2, 6HG1, 6HG2, 6HH1 and 6HH2).

Maximum quantity per packaging/package 1/ for packing methods OP1 to OP8

Packing Method / **Maximum Quantity**	**OP1**	**OP2 1/**	**OP3**	**OP4 1/**	**OP5**	**OP6**	**OP7**	**OP8**
Maximum mass (kg) for solids and for combination packagings (liquid and solid)	*0.5*	*0.5/10*	*5*	*5/25*	*25*	*50*	*50*	*200 2/*
Maximum contents in litres for liquids 3/	*0.5*	-	*5*	-	*30*	*60*	*60*	*225 4/*

1/ *If two values are given, the first applies to the maximum net mass per inner packaging and the second to the maximum net mass of the complete package.*
2/ *60 kg for jerricans/ 100 kg for boxes.*
3/ *Viscous liquids shall be treated as solids when they do not meet the criteria provided in the definition for "liquids" presented in 1.2.1.*
4/ *60 litres for jerricans.*

Additional requirements:

1. Metal packagings, including inner packagings of combination packagings and outer packagings of combination or composite packagings may only be used for packing methods OP7 and OP8;
2. In combination packagings, glass receptacles may only be used as inner packagings with a maximum content of 0.5 kg or 0.5 litre.
3. In combination packagings, cushioning materials shall not be readily combustible.
4. The packaging of an organic peroxide or self-reactive substance required to bear an "EXPLOSIVE" subsidiary risk label shall also comply with the provisions given in 4.1.5.10 and 4.1.5.11.

Special packing provisions:

PP21 For certain self-reactive substances of types B or C, UN 3221, UN3222, UN3223, UN3224, UN3231, UN3232, UN3233 and UN3234 a smaller packaging than that allowed by packing methods OP5 or OP6 respectively shall be used (see 4.1.6 and 2.4.2.3.2.4).

PP22 UN 3241, 2-Bromo-2-nitropropane-1, 3-diol, shall be packed in accordance with packing method OP6.

P600	PACKING INSTRUCTION	P600
This instruction applies to UN Nos 1700, 2016 and 2017.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Outer packagings: (1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2) meeting the packing group II performance level. The articles shall be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport. Maximum net mass: 75 kg		

P601	PACKING INSTRUCTION	P601

The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met:

(1) Combination packagings consisting of glass inner packagings not exceeding 1 litre in capacity packed with absorbent material sufficient to absorb the entire contents and inert cushioning material placed in metal receptacles which are individually packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 15 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport.

(2) Combination packagings consisting of metal inner packagings or additionnally, for UN 1744 only, in polyvinylidene fluoride (PVDF) innter packagings, not exceeding 5 litres in capacity individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport.

(3) Combination packagings:

Outer packagings: Plastic or steel drums, removable head (1A2 or 1H2) tested in accordance with the test requirements in 6.1.5 as combination packagings as assembled for transport;

Inner packagings:

Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1), meeting the requirements of Chapter 6.1 for single packagings), subject to the following conditions:

(a) The hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure);

(b) The design and production leakproofness tests shall be conducted at a test pressure of 0.30 bar;

(c) They shall be isolated from the outer drum by the use of inert shock-mitigating cushioning material which surrounds the inner packaging on all sides;

(d) Their capacity shall not exceed 125 litres; and

(e) Closures shall be of a screw cap type that are:

(i) physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport; and

(ii) provided with a cap seal.

(4) Gas cylinders and gas receptacles with a minimum test pressure of 10 bar (gauge pressure) conforming to the provisions of P200. No cylinder may be equipped with any pressure relief device. Gas cylinders and gas receptacles shall have their valves protected.

P602	PACKING INSTRUCTION	P602

The following packagings are authorised provided the general provisions of **4.1.1** and **4.1.3** are met:

(1) Combination packagings consisting of glass inner packagings packed with absorbent material sufficient to absorb the entire contents and inert cushioning material placed in metal receptacles which are individually packed in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 50 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport. Inner packagings shall not exceed 1 litre in capacity.

(2) Combination packagings consisting of metal inner packagings individually packed with absorbent material sufficient to absorb the contents and inert cushioning material in 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2 outer packagings with a maximum gross mass of 75 kg. Inner packagings shall not be filled to more than 90% of their capacity. The closure of each inner packaging shall be physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport. Inner packagings shall not exceed 5 litres in capacity.

(3) Drums and composite packagings (1A1, 1B1, 1N1, 1H1 or 6HA1), subject to the following conditions:

(a) The hydraulic pressure test shall be conducted at a pressure of at least 3 bar (gauge pressure);

(b) The design and production leakproofness tests shall be conducted at a test pressure of 0.30 bar; and

(c) Closures shall be of a screw cap type that are:

(i) physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transport; and

(ii) provided with a cap seal.

(4) Gas cylinders and gas receptacles with a minimum test pressure of 10 bar (gauge pressure) conforming to the provisions of P200. No cylinder may be equipped with any pressure relief device. Gas cylinders and gas receptacles shall have their valves protected.

P620	PACKING INSTRUCTION	P620

This instruction applies to UN Nos 2814 and 2900.

The following packagings are authorized provided the special packing provisions of **4.1.8** are met:

Packagings meeting the requirements of Chapter 6.3 and approved accordingly consisting of:

(a) Inner packagings comprising:

(i) watertight primary receptacle(s);

(ii) a watertight secondary packaging;

(iii) an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple primary receptacles are placed in a single secondary packaging, they shall be individually wrapped so as to prevent contact between them;

(b) An outer packaging of adequate strength for its capacity, mass and intended use. The smallest external dimension shall be at least 100 mm.

Additional requirements:

1. Inner packagings containing infectious substances shall not be consolidated with inner packagings containing unrelated types of goods. Complete packages may be overpacked in accordance with the provisions of 1.2.1 and 5.1.2: such an overpack may contain dry ice.

2. Other than for exceptional consignments, e.g. whole organs which require special packaging, the following additional requirements shall apply:

(a) Lyophilized substances:

Primary receptacles shall be flame-sealed glass ampoules or rubber-stoppered glass vials fitted with metal seals;

(b) Liquid or solid substances:

(i) Substances consigned at ambient temperatures or at a higher temperature. Primary receptacles shall be of glass, metal or plastics. Positive means of ensuring a leakproof seal shall be provided, e.g. a heat seal, a skirted stopper or a metal crimp seal. If screw caps are used, they shall be reinforced with adhesive tape;

(ii) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant shall be placed around the secondary packaging(s) or alternatively in an overpack with one or more complete packages marked in accordance with 6.3.1.1. Interior supports shall be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack shall be leakproof. If dry ice is used, the outer packaging or overpack shall permit the release of carbon dioxide gas. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used;

(iii) Substances consigned in liquid nitrogen. Plastics primary receptacles capable of withstanding very low temperature shall be used. The secondary packaging shall also be capable of withstanding very low temperatures, and in most cases will need to be fitted over the primary receptacle individually. Provisions for the consignment of liquid nitrogen shall also be fulfilled. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the liquid nitrogen.

3. Whatever the intended temperature of the consignment, the primary receptacle or the secondary packaging shall be capable of withstanding without leakage an internal pressure producing a pressure differential of not less than 95 kPa and temperatures in the range -40 °C to +55 °C.

P621	PACKING INSTRUCTION	P621
This instruction applies to UN 3291.		
The following packagings are authorized provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Rigid, leakproof packagings meeting the requirements of Chapter 6.1 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the packaging is capable of retaining liquids. (2) For packages containing larger quantities of liquid, rigid packagings meeting the requirements of Chapter 6.1 at the packing group II performance level for liquids.		
Additional requirement: Packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.1.		

P800	PACKING INSTRUCTION	P800

This instruction applies to UN Nos 2809 and 2803.

The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met:

(1) Cylinders in accordance with P200; or

(2) Steel flasks or bottles with threaded closures with a capacity not exceeding 2.5 l; or

(3) Combination packagings which conform to the following requirements:

(a) Inner packagings shall comprise glass, metal or rigid plastics intended to contain liquids with a maximum net mass of 15 kg each.

(b) The inner packagings shall be packed with sufficient cushioning material to prevent breakage.

(c) Either the inner packagings or the outer packagings shall have inner liners or bags of strong leakproof and puncture-resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from the package irrespective of its position or orientation.

(d) The following outer packagings and maximum net masses are authorized:

Outer packaging:	**Maximum net mass**
Drums	
steel (1A2)	400 kg
other metal (1N2)	400 kg
plastics (1H2)	400 kg
plywood (1D)	400 kg
fibre (1G)	400 kg
Boxes	
steel (4A)	400 kg
natural wood (4C1)	250 kg
natural wood with sift proof walls (4C2)	250 kg
plywood (4D)	250 kg
reconstituted wood (4F)	125 kg
fibreboard (4G)	125 kg
expanded plastics (4H1)	60 kg
solid plastics (4H2)	125 kg

Special packing provision:

PP41 For UN 2803, when it is necessary to transport Gallium at low temperatures in order to maintain it in a completely solid state, the above packagings may be overpacked in a strong, water-resistant outer packaging which contains dry ice or other means of refrigeration. If a refrigerant is used, all of the above materials used in the packaging of gallium shall be chemically and physically resistant to the refrigerant and shall have impact resistance at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging shall permit the release of carbon dioxide gas.

P801	PACKING INSTRUCTION	P801
This instruction applies to new and used batteries assigned to UN Nos 2794, 2795 or 3028.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Rigid outer packagings; (2) Wooden slatted crates; (3) Pallets. Used storage batteries may also be transported loose in stainless steel or plastics battery boxes capable of containing any free liquid.		
Additional requirements: 1. Batteries shall be protected against short circuits. 2. Batteries stacked shall be adequately secured in tiers separated by a layer of non conductive material. 3. Battery terminals shall not support the weight of other superimposed elements. 4. Batteries shall be packaged or secured to prevent inadvertent movement.		

P802	PACKING INSTRUCTION	P802
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Combination packagings Outer packagings: 1A2, 1B2, 1N2, 1H2, 1D, 4A, 4B, 4C1, 4C2, 4D, 4F, or 4H2; maximum net mass: 75 kg. Inner packagings: glass or plastics; maximum capacity: 10 litres. (2) Combination packagings Outer packagings: 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G or 4H2; maximum net mass: 125 kg. Inner packagings: metal; maximum capacity: 40 litres (3) Composite packagings: Glass receptacle in steel, aluminium, plywood or solid plastics drum (6PA1, 6PB1, 6PD1, or 6PH2) or in a steel, aluminium, wood or plywood box (6PA2, 6PB2, 6PC or 6PD2); maximum capacity: 60 litres. (4) Austenitic steel drums (1A1) with a maximum capacity of 250 litres. (5) Gas cylinders conforming to the construction, testing and filling requirements approved by the competent authority.		

P803	PACKING INSTRUCTION	P803
This instruction applies to UN 2028.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G); (2) Boxes (4A, 4B, 4C1, 4C2, 4D, 4F, 4G, 4H2); Maximum net mass: 75kg. The articles shall be individually packaged and separated from each other using partitions, dividers, inner packagings or cushioning material to prevent inadvertent discharge during normal conditions of transport.		

P900	PACKING INSTRUCTION	P900
This instruction applies to UN 2216.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Packagings according to P002; or (2) Bags (5H1, 5H2, 5H3, 5H4, 5L1, 5L2, 5L3, 5M1 or 5M2) with a maximum net mass of 50 kg. Fish meal may also be transported unpackaged when it is packed in closed transport units and the free air space has been restricted to a minimum.		

P901	PACKING INSTRUCTION	P901
This instruction applies to UN 3316.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the performance level consistent with the packing group assigned to the kit as a whole (see 3.3.1, special provision 251). Maximum quantity of dangerous goods per outer packaging: 10 kg.		
Additional requirement: Dangerous goods in kits shall be packed in inner packagings which shall not exceed either 250 ml or 250 g and shall be protected from other materials in the kit.		

P902	PACKING INSTRUCTION	P902
This instruction applies to UN 3268.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packagings conforming to the packing group III performance level. Each packaging shall conform to special provision 235 (see 3.3.1) and shall conform to the packing group III performance level. The packaging shall be designed and constructed to prevent movement of the articles and inadvertent discharge during normal conditions of transport. The articles may also be carried unpackaged in dedicated handling devices, vehicles, containers or wagons when moved from where they are manufactured to an assembly plant.		

P903	PACKING INSTRUCTION	P903
This instruction applies to UN Nos 3090 and 3091.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: Packaging conforming to the packing group II performance level. When lithium cells and batteries are packed with equipment, they shall be packed in inner fibreboard packagings that meet the requirements for packing group II. When lithium cells and batteries included in Class 9 are contained in equipment, the equipment shall be packed in strong outer packagings in such a manner as to prevent accidental operation during transport.		
Additional requirement: Batteries shall be protected against short circuit.		

P904	PACKING INSTRUCTION	P904
This instruction applies to UN 3245.		
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met: (1) Packagings according to P001 or P002. (2) Outer packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following: (a) An inner packaging comprising: (i) a watertight primary receptacle(s); (ii) a watertight secondary packaging which is leakproof; (iii) absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if several primary receptacles are placed in a single secondary packaging, they shall be individually wrapped so as to prevent contact between them. (b) An outer packaging of adequate strength for its capacity, mass and intended use, and with a minimum external dimension of 100mm.		

P905	PACKING INSTRUCTION	P905
This instruction applies to UN Nos 3072 and 2990.		
Any suitable packaging is authorized, provided the general provisions of **4.1.1** and **4.1.3** are met, except that packagings need not conform to the requirements of Part 6. When the life saving appliances are constructed to incorporate or are contained in rigid outer weatherproof casings (such as for lifeboats), they may be transported unpackaged.		
Additional requirements: 1. All dangerous substances and articles contained as equipment within the appliances shall be secured to prevent inadvertent movement and in addition: (a) signal devices of Class 1 shall be packed in plastics or fibreboard inner packagings; (b) gases (Class 2.2) shall be contained in cylinders as specified by the competent authority, which may be connected to the appliance; (c) electric storage batteries (Class 8) and lithium batteries (Class 9) shall be disconnected or electrically isolated and secured to prevent any spillage of liquid; and (d) small quantities of other dangerous substances (for example in Classes 3, 4.1 and 5.2) shall be packed in strong inner packagings. 2. Preparation for transport and packaging shall include provisions to prevent any accidental inflation of the appliance.		

P906	PACKING INSTRUCTION	P906

This instruction applies to UN Nos 2315, 3151 and 3152.

The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** are met:

(1) For liquids and solids containing or contaminated with PCBs: Packagings in accordance with P001 or P002, as appropriate.

(2) For Transformers and condensers and other devices: Leakproof packagings which are capable of containing, in addition to the devices, at least 1.25 times the volume of the liquid PCBs present in them. There shall be sufficient absorbent material in the packagings to absorb at least 1.1 times the volume of liquid which is contained in the devices. In general, transformers and condensers shall be carried in leakproof metal packagings which are capable of holding, in addition to the transformers and condensers, at least 1.25 times the volume of the liquid present in them.

Notwithstanding the above, liquids and solids not packaged in accordance with P001 and P002 and unpackaged transformers and condensers may be transported in cargo transport units fitted with a leakproof metal tray to a height of at least 800mm, containing sufficient inert absorbent material to absorb at least 1.1 times the volume of any free liquid.

Additional requirement:

Adequate provisions shall be taken to seal the transformers and condensers to prevent leakage during normal conditions of transport.

4.1.4.2 Packing instructions concerning the use of IBCs

IBC01	PACKING INSTRUCTION	IBC01
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: Metal (31A, 31B and 31N).		
Additional requirement: Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.		

IBC02	PACKING INSTRUCTION	IBC02
The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met: (1) Metal (31A, 31B and 31N); (2) Rigid plastics (31H1 and 31H2); (3) Composite (31HZ1).		
Additional requirement: Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.		
Special packing provisions: **B2** For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units. **B5** For UN Nos 1791, 2014 and 3149, IBCs shall be provided with a device to allow venting during transport. The inlet to the venting device shall be sited in the vapour space of the IBC under maximum filling conditions during transport. **B7** For UN Nos 1222 and 1865, IBCs with a capacity greater than 450 litres are not permitted due to the substance's potential for explosion when transported in large volumes. **B8** The pure form of this substance shall not be transported in IBCs since it is known to have a vapour pressure of more than 110 kPa at 50 °C or 130 kP1 at 55 °C.		

IBC03	PACKING INSTRUCTION	IBC03

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (31A, 31B and 31N);

(2) Rigid plastics (31H1 and 31H2);

(3) Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2).

Additional requirement:

Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized.

Special packing provision:

B8 The pure form of this substance shall not be transported in IBCs since it is known to have a vapour pressure of more than 110 kPa at 50 °C or 130 kPa at 55 °C.

IBC04	PACKING INSTRUCTION	IBC04

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N).

Special packing provisions:

B1 For packing group I substances, IBCs shall be transported in closed transport units.

B2 For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units.

IBC05	PACKING INSTRUCTION	IBC05

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 21HZ1 and 31HZ1).

Special packing provision:

B1 For packing group I substances, IBCs shall be transported in closed transport units.

B2 For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units.

B3 Only flexible IBCs fitted with a coating or liner are authorized.

IBC06	PACKING INSTRUCTION	IBC06

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2).

Additional requirement:

Composite IBCs 11HZ2, 21HZ2 and 31HZ2 shall not be used when the substances being transported may become liquid during transport.

Special packing provision:

B1 For packing group I substances, IBCs shall be transported in closed transport units.

B2 For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units.

IBC07	PACKING INSTRUCTION	IBC07

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2);

(4) Wooden (11C, 11D and 11F).

Additional requirement:

Liners of wooden IBCs shall be sift proof.

Special packing provision:

B1 For packing group I substances, IBCs shall be transported in closed transport units.

B2 For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units.

IBC08	PACKING INSTRUCTION	IBC08

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2);

(3) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2);

(4) Fibreboard (11G);

(5) Wooden (11C, 11D and 11F);

(6) Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).

Special packing provisions:

B2 For packing group II solid substances in IBCs other than metal or rigid plastics IBCs, the IBCs shall be transported in closed transport units.

B3 Only flexible IBCs fitted with a coating or liner are authorized.

B4 For packing group I and packing group II substances, flexible, fibreboard or wooden IBCs shall be sift-proof and water-resistant or shall be fitted with a sift-proof and water-resistant liner.

B6 For UN Nos 1327, 1363, 1364, 1365, 1386, 1841, 2211, 2217, 2793 and 3314, IBCs are not required to meet the IBC testing requirements of Chapter 6.5.

IBC99	PACKING INSTRUCTION	IBC99

Only IBCs which are approved by the competent authority may be used (see 4.1.3.7).

IBC100	PACKING INSTRUCTION	IBC100

This instruction applies to UN Nos 0082, 0241, 0331 and 0332.

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** and special provisions of **4.1.5** are met:

(1) Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N);

(2) Flexible (13H2, 13H3, 13H4, 13L2, 13L3, 13L4 nad 13M2);

(3) Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1,and 31H2);

(4) Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2).

Additional requirements:

1. IBCs shall only be used for free flowing substances.
2. Flexible IBCs shall only be used for solids.

Special packing provisions:

B9 For UN 0082, this packing instruction may only be used when the substances are mixtures of ammonium nitrate or other inorganic nitrates with other combustible substances which are not explosive ingredients. Such explosives shall not contain nitroglycerin, similar liquid organic nitrates, or chlorates. Metal IBCs are not authorized.

B10 For UN 0241, this packing instruction may only be used for substances which consist of water as an essential ingredient and high proportions of ammonium nitrate or other oxidizing substances some or all of which are in solution. The other constituents may include hydrocarbons or aluminium powder, but shall not include nitro-derivatives such as trinitrotoluene. Metal IBCs are not authorized.

IBC 520	PACKING INSTRUCTION				IBC520
This instruction applies to organic peroxides and self-reactive substances of type F.					
The IBCs listed below are authorized for the formulations listed, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** and special provisions of **4.1.7.2** are met. For formulations not listed below, only IBCs which are approved by the competent authority may be used (see 4.1.7.2.2).					
UN No	**Organic peroxide**	**Type of IBC 1/**	**Maximum quantity (litres)**	**Control temperature 2/**	**Emergency temperature**
3109	**ORGANIC PEROXIDE, TYPE F, LIQUID** tert-Butyl peroxyacetate, not more than 32% in diluent type A	31A 31HA1	1250 1000		
	tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A	31A 31HA1	1250 1000		
	Cumyl hydroperoxide, not more than 90% in diluent type A	31HA1	1250		
	Dibenzoyl peroxide, not more than 42% as a stable dispersion	31H1	1000		
	Di-tert-butyl peroxide, not more than 32% in diluent type A	31A 31HA1	1250 1000		
	1,1-Di-(tert-butylperoxy) cyclohexane, not more than 42% in diluent type A	31H1	1000		
	Dilauroyl peroxide, not more than 42%, stable dispersion, in water	31HA1	1000		
	Isopropyl cumyl hydroperoxide, not more than 72% in diluent type A	31HA1	1250		
	p-Menthyl hydroperoxide, not more than 72% in diluent type A	31HA1	1250		
	Peroxyacetic acid, stabilized, not more than 17%	31H1 31HA1 31A	1500 1500 1500		
3119	**ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED** tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B	31HA1 31A	1000 1250	+30 °C +30 °C	+35 °C +35 °C
	tert-Butyl peroxypivalate, not more than 27% in diluent type B	31HA1 31A	1000 1250	+10 °C +10 °C	+15°C +15 °C
	Di-(4-tert-butylcyclohexyl) peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1000	+30 °C	+35 °C
	Dicetyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1000	+30 °C	+35 °C
	Dimyristyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1000	+15 °C	+25 °C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 38% in diluent type A	31HA1 31A	1000 1250	+10 °C +10 °C	+15 °C +15 °C

IBC 520 (cont'd)	PACKING INSTRUCTION	IBC520

Additional requirements:

1. IBCs shall be provided with a device to allow venting during transport. The inlet to the pressure-relief device shall be sited in the vapour space of the IBC under maximum filling conditions during transport.

2. To prevent explosive rupture of metal IBCs or composite IBCs with complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapours evolved during self-accelerating decomposition or during a period of not less than one hour of fire-engulfment as calculated by the formula in 4.2.1.13.8. The control and emergency temperatures specified in this packing instruction are based on a non-insulated IBC. When consigning an organic peroxide in an IBC in accordance with this instruction, it is the responsibility of the consignor to ensure that:

   (a) the pressure and emergency relief devices installed on the IBC are designed to take appropriate account of the self-accelerating decomposition of the organic peroxide and of fire engulfment; and

   (b) when applicable, the control and emergency temperatures indicated are appropriate, taking into account the design (e.g. insulation) of the IBC to be used.

IBC620	PACKING INSTRUCTION	IBC620

This instruction applies to UN 3291.

The following IBCs are authorized, provided the general provisions of **4.1.1**, **4.1.2** and **4.1.3** are met:

Rigid, leakproof IBCs conforming to the Packing Group II performance level.

Additional requirements:

1. There shall be sufficient absorbent material to absorb the entire amount of liquid present in the IBC.

2. IBCs shall be capable of retaining liquids.

3. IBCs intended to contain sharp objects such as broken glass and needles shall be resistant to puncture.

4.1.4.3 Packing instructions concerning the use of large packagings

LP01	PACKING INSTRUCTION			LP01
The following large packagings are authorized provided the general provision of **4.1.1** and **4.1.3** are met:				
Inner packagings	**Large outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass 10 litre Plastics 30 litre Metal 40 litre	Steel (50A) Aluminium (50B) Other metal (50N) Plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)	Not allowed	Not allowed	3 m^3

LP02	PACKING INSTRUCTION			LP02
The following large packagings are authorized provided the general provision of **4.1.1** and **4.1.3** are met:				
Inner packagings	**Large outer packagings**	**Packing group I**	**Packing group II**	**Packing group III**
Glass 10kg Plastics 2/ 50kg Metal 50 kg Paper 1/ 2/ 50 kg Fibre 1/ 2/ 50 kg	Steel (50A) Aluminium (50B) Other metal (50N) Plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)	Not allowed	Not allowed	3 m^3
1/ *These packagings shall not be used when the substances being transported may become liquid during transport.*				
2/ *Packagings shall be siftproof.*				

LP99	PACKING INSTRUCTION	LP99
Only packagings which are approved by the Competent Authority may be used (see 4.1.3.7).		

LP101	PACKING INSTRUCTION	LP101
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and special provisions of **4.1.5** are met:		
Inner packagings	**Intermediate packagings**	**Large packagings**
Not necessary	Not necessary	Steel (50A) Aluminium (50B) Other metal (50N) Plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)

Special packing provision:

L1 For UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451 and 0488: Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling devices.

LP102	PACKING INSTRUCTION	LP102
The following packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and special provisions of **4.1.5** are met:		
Inner packagings	**Intermediate packagings**	**Outer packagings**
Bags water resistant **Receptacles** fibreboard metal plastics wood **Sheets** fibreboard, corrugated **Tubes** fibreboard	Not necessary	Steel (50A) Aluminium (50B) Other metal (50N) Plastics (50H) Natural wood (50C) Plywood (50D) Reconstituted wood (50F) Fibreboard (50G)

LP621	PACKING INSTRUCTION	LP621
This instruction applies to UN 3291.		
The following large packagings are authorized, provided the general provisions of **4.1.1** and **4.1.3** and the special provisions of **4.1.8** are met: (1) For clinical waste placed in inner packagings: Rigid, leakproof large packagings conforming to the requirements of Chapter 6.6 for solids, at the packing group II performance level, provided there is sufficient absorbent material to absorb the entire amount of liquid present and the large packaging is capable of retaining liquids. (2) For packages containing larger quantities of liquid: Large rigid packagings conforming to the requirements of Chapter 6.6, at the packing group II performance level, for liquids.		
Additional requirement: Large packagings intended to contain sharp objects such as broken glass and needles shall be resistant to puncture and retain liquids under the performance test conditions in Chapter 6.6.		

4.1.5 Special packing provisions for goods of Class 1

4.1.5.1 The general provisions of section 4.1.1 shall be met.

4.1.5.2 All packagings for Class 1 goods shall be so designed and constructed that:

(a) they will protect the explosives, prevent them escaping and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of transport including foreseeable changes in temperature, humidity and pressure;

(b) the complete package can be handled safely in normal conditions of transport; and

(c) the packages will withstand any loading imposed on them by foreseeable stacking to which they will be subject during transport so that they do not add to the risk presented by the explosives, the containment function of the packagings is not harmed, and they are not distorted in a way or to an extent which will reduce their strength or cause instability of a stack.

4.1.5.3 All explosive substances and articles, as prepared for transport, shall have been classified in accordance with the procedures detailed in 2.1.3.

4.1.5.4 Class 1 goods shall be packed in accordance with the appropriate packing instruction shown in Column 8 of the Dangerous Goods List, as detailed in 4.1.4.

4.1.5.5 Packagings, including IBCs and large packagings shall conform to the requirements of Chapter 6.1, 6.5 or 6.6, respectively, and shall meet the test requirements of 6.1.5, 6.5.4 or 6.6.5, respectively, for Packing Group II, subject to 4.1.1.13, 6.1.2.4 and 6.5.1.4.4. Packagings other than metal packagings meeting the test criteria of Packing Group I may be used. To avoid unnecessary confinement, metal packagings of Packing Group I shall not de used.

4.1.5.6 The closure device of packagings containing liquid explosives shall ensure a double protection against leakage.

4.1.5.7 The closure device of metal drums shall include a suitable gasket; if a closure device includes a screw-thread, the ingress of explosive substances into the screw-thread shall be prevented.

4.1.5.8 Packagings for water soluble substances shall be water resistant. Packagings for desensitized or phlegmatized substances shall be closed to prevent changes in concentration during transport.

4.1.5.9 When the packaging includes a double envelope filled with water which may freeze during transport, a sufficient quantity of an anti-freeze agent shall be added to the water to prevent freezing. Anti-freeze that could create a fire hazard because of its inherent flammability shall not be used.

4.1.5.10 Nails, staples and other closure devices made of metal without protective covering shall not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal

4.1.5.11 Inner packagings, fittings and cushioning materials and the placing of explosive substances or articles in packages shall be accomplished in a manner which prevents the explosive substances or articles from becoming loose in the outer packaging under normal conditions of transport. Metallic components of articles shall be prevented from making contact with metal packagings. Articles containing explosive substances not enclosed in an outer casing shall be separated from each other in order to prevent friction and impact. Padding, trays, partitioning in the inner or outer packaging, mouldings or receptacles may be used for this purpose.

4.1.5.12 Packagings shall be made of materials compatible with, and impermeable to, the explosives contained in the package, so that neither interaction between the explosives and the packaging materials, nor leakage, causes the explosive to become unsafe to transport, or the hazard division or compatibility group to change.

4.1.5.13 The ingress of explosive substances into the recesses of seamed metal packagings shall be prevented.

4.1.5.14 Plastics packagings shall not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive substances or articles to initiate, ignite or function.

4.1.5.15 Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems shall be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport.

Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of these Regulations and such tests have been successfully undertaken, the competent authority may approve such articles to be transported under these Regulations.

4.1.5.16 Explosive substances shall not be packed in inner or outer packagings where the differences in internal and external pressures, due to thermal or other effects, could cause an explosion or rupture of the package.

4.1.5.17 Whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging shall be provided with an inner liner or coating (see 4.1.1.2).

4.1.5.18 Packing instruction 101 may be used for any explosive provided the package has been approved by a competent authority regardless of whether the packaging complies with the packing instruction assignment in the Dangerous Goods List.

4.1.6 Special packing provisions for Class 2

[reserved]

4.1.7 Special packing provisions for organic peroxides (Division 5.2) and self-reactive substances of Division 4.1

4.1.7.1 ***Use of packagings***

4.1.7.1.1 Packagings for organic peroxides and self-reactive substances shall meet the requirements of Chapter 6.1 or of Chapter 6.6 at the Packing Group II performance level. To avoid unnecessary confinement, metal packaging meeting the test criteria of Packing Group I shall not be used.

4.1.7.1.2 The packing methods for organic peroxides and self-reactive substances are listed in Packing Instruction 520 and are designated OP1 to OP8. The quantities specified for each packing method are the maximum quantities autorized per package.

4.1.7.1.3 The packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 2.4.2.3.2.4 and 2.5.3.2.4.

4.1.7.1.4 For new organic peroxides, new self-reactive substances or new formulations of currently assigned organic peroxides or self-reactive substances, the following procedure shall be used to assign the appropriate packing method:

(a) ORGANIC PEROXIDE, TYPE B or SELF-REACTIVE SUBSTANCE, TYPE B:

Packing method OP5 shall be assigned, provided that the organic peroxide (or self-reactive substance) satisfies the criteria of 2.5.3.3.2(b) (resp. 2.4.2.3.3.2(b)) in a packaging authorized by the packing method. If the organic peroxide (or self-reactive substance) can only satisfy these criteria in a smaller packaging than those authorized by packing method OP5 (viz. one of the packagings listed for OP1 to OP4), then the corresponding packing method with the lower OP number is assigned;

(b) ORGANIC PEROXIDE, TYPE C or SELF-REACTIVE SUBSTANCE, TYPE C:

Packing method OP6 shall be assigned, provided that the organic peroxide (or self-reactive substance) satisfies the criteria of 2.5.3.3.2(c) (resp. 2.4.2.3.3.2(c)) in packaging authorized by the packing method. If the organic peroxide (or self-reactive substance) can only satisfy these criteria in a smaller packaging than those authorized by packing method OP6 then the corresponding packing method with the lower OP number is assigned;

(c) ORGANIC PEROXIDE, TYPE D or SELF-REACTIVE SUBSTANCE, TYPE D:

Packing method OP7 shall be assigned to this type of organic peroxide or self-reactive substance;

(d) ORGANIC PEROXIDE, TYPE E or SELF-REACTIVE SUBSTANCE, TYPE E:

Packing method OP8 shall be assigned to this type of organic peroxide or self-reactive substance;

(e) ORGANIC PEROXIDE, TYPE F or SELF-REACTIVE SUBSTANCE, TYPE F:

Packing method OP8 shall be assigned to this type of organic peroxide or self-reactive substance.

4.1.7.2 ***Use of intermediate bulk containers***

4.1.7.2.1 The currently assigned organic peroxides specifically listed in 2.5.3.2.4 and indicated with the letter "N" in the "Packing Method" column of that table may be transported in IBCs in accordance with Packing Instruction IBC 520.

4.1.7.2.2 Other organic peroxides and self-reactive substances of type F may be transported in IBCs under conditions established by the competent authority of the country of origin when, on the basis of the appropriate tests, that competent authority is satisfied that such transport may be safely conducted. The tests undertaken shall include those necessary:

(a) to prove that the organic peroxide (or self-reactive substance) complies with the principles for classification given in 2.5.3.3.2(f), exit box F of Figure 2.2; (resp. 2.4.2.3.3.2 (f), exit box F of Figure 2.1);

(b) to prove the compatibility of all materials normally in contact with the substance during the transport;

(c) to determine, when applicable, the control and emergency temperatures associated with the transport of the product in the IBC concerned as derived from the SADT;

(d) to design, when applicable, pressure and emergency relief devices; and

(e) to determine if any special provisions are necessary for safe transport of the substance.

4.1.8 Special packing provisions for infectious substances (Division 6.2)

4.1.8.1 Consignors of infectious substances shall ensure that packages are prepared in such a manner that they arrive at their destination in good condition and present no hazard to persons or animals during transport.

4.1.8.2 The definitions in 1.2.1 and the general packing provisions of 4.1.1.1 to 4.1.1.14, except 4.1.1.3 and 4.1.1.9 to 4.1.1.12, apply to infectious substances packages.

4.1.8.3 An itemized list of contents shall be enclosed between the secondary packaging and the outer packaging.

4.1.8.4 Before an empty packaging is returned to the consignor, or sent elsewhere, it shall be thoroughly disinfected or sterilized and any label or marking indicating that it had contained an infectious substance shall be removed or obliterated.

4.1.9 Special packing provisions for Class 7

4.1.9.1 ***General***

4.1.9.1.1 Radioactive material, packagings and packages shall meet the requirements of Chapter 6.4. The quantity of radioactive material in a package shall not exceed the limits specified in 2.7.7.1.

4.1.9.1.2 The non-fixed contamination on the external surfaces of any package shall be kept as low as practicable and, under routine conditions of transport, shall not exceed the following limits:

(a) 4 Bq/cm^2 for beta and gamma emitters and low toxicity alpha emitters, and

(b) 0.4 Bq/cm^2 for all other alpha emitters.

These limits are applicable when averaged over any area of 300 cm^2 of any part of the surface.

4.1.9.1.3 A package shall not contain any other items except such articles and documents as are necessary for the use of the radioactive material. This requirement shall not preclude the transport of low specific activity material or surface contaminated objects with other items. The transport of such articles and documents in a package, or of low specific activity material or surface contaminated objects with other items may be permitted provided that there is no interaction between them and the packaging or its radioactive contents that would reduce the safety of the package.

4.1.9.1.4 Except as provided in 7.1.6.5.5, the level of non-fixed contamination on the external and internal surfaces of overpacks, freight containers, tanks and intermediate bulk containers shall not exceed the limits specified in 4.1.9.1.2.

4.1.9.1.5 Radioactive material with a subsidiary risk shall be transported in packagings, IBCs or tanks fully complying with the requirements of the relevant chapters of Part 6 as appropriate, as well as applicable requirements of chapters 4.1 or 4.2 for that subsidiary risk.

4.1.9.2 ***Requirements and controls for transport of LSA material and SCO***

4.1.9.2.1 The quantity of LSA material or SCO in a single Industrial package Type 1 (Type IP-1), Industrial package Type 2 (Type IP-2), Industrial package Type 3 (Type IP-3), or object or collection of objects, whichever is appropriate, shall be so restricted that the external radiation level at 3 m from the unshielded material or object or collection of objects does not exceed 10 mSv/h.

4.1.9.2.2 LSA material and SCO which is or contains fissile material shall meet the applicable requirements of 7.1.6.4.1, 7.1.6.4.2, and 6.4.11.1.

4.1.9.2.3 LSA material and SCO in groups LSA-I and SCO-I may be transported unpackaged under the following conditions:

(a) all unpackaged material other than ores containing only naturally occurring radionuclides shall be transported in such a manner that under routine conditions of transport there will be no escape of the radioactive contents from the conveyance nor will there be any loss of shielding;

(b) each conveyance shall be under exclusive use, except when only transporting SCO-I on which the contamination on the accessible and the inaccessible surfaces is not greater than ten times the applicable level specified in 2.7.2; and

(c) for SCO-I where it is suspected that non-fixed contamination exists on inaccessible surfaces in excess of the values specified in 2.7.5(a)(i), measures shall be taken to ensure that the radioactive material is not released into the conveyance.

4.1.9.2.4 LSA material and SCO, except as otherwise specified in 4.1.9.2.3, shall be packaged in accordance with Table 4.1.9.2.4.

4.1.9.2.5 Industrial package requirements for LSA material and SCO

Radioactive contents	Industrial package type	
	Exclusive use	Not under exclusive use
LSA-I Solid a/ Liquid	 Type IP-1 Type IP-1	 Type IP-1 Type IP-2
LSA-II Solid Liquid and gas	 Type IP-2 Type IP-2	 Type IP-2 Type IP-3
LSA-III	Type IP-2	Type IP-3
SCO-I a/	Type IP-1	Type IP-1
SCO-II	Type IP-2	Type IP-2

a/ *Under the conditions specified in 4.1.9.2.3, LSA-I material and SCO-I may be transported unpackaged.*

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TRANSPORT OF DANGEROUS GOODS

REPORT OF THE COMMITTEE OF EXPERTS ON ITS TWENTIETH SESSION (7-16 December 1998)

Addendum 4

Revised Chapter 4.1 of the Model Regulations on the Transport of Dangerous Goods

Corrigendum

Page 11 The reference "4/" to footnote 4/ should be placed immediately after the figure "2" before the closing parenthesis, as this footnote applies only to 1A2, 1B2, 1N2, 3A2 and 3B2.

Page 24 P130, replace ", 0501 and 502:" by "and 0502:" at the end of the list of UN numbers in special packing provision PP67.

Page 55 P620, insert "other than for solid infectious substances," at the begining of (a)(iii) under the heading "Packagings meeting the requirements of Chapter 6.3 and approved accordingly consisting of:".

Page 62 IBC 02, delete special packing provision B2.

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Page 67 IBC520, replace "32%" by "52%" in the description of chemical name in the entry for "Di-tert-butyl peroxide" under UN 3109 and replace "+ 25 °C" by "+ 20 °C" in the column headed "Emergency temperature" for the entry of "Dimyristyl peroxydicarbonate, not more than 42%, stable dispersion, in water" under UN 3119.

IBC 520, under 3109, add the following new entry:

UN No	Organic peroxide	Type of IBC 1/	Maximum quantity (litres)	Control tempe-rature 2/	Emergency tempe-rature
	tert-Butyl hydroperoxide, not more than 72% with water	31A	1250		

IBC 520, under 3119, add the following new entries:

UN No	Organic peroxide	Type of IBC 1/	Maximum quantity (litres)	Control tempe-rature 2/	Emergency tempe-rature
	tert-Butyl peroxyneodecanoate, not more than 32% in diluent type A	31A	1250	0 °C	+ 10 °C
	tert-Butyl peroxyneodecanoate, not more than 42%, stable dispersion, in water	31A	1250	- 5 °C	+ 5 °C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52%, stable dispersion, in water	31A	1250	+ 10 °C	+ 15 °C
	Cumyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	- 15 °C	- 5 °C
	1,1,3,3-Tetramethylbutyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	- 5 °C	+ 5 °C
	Di-(2-ethylhexyl) peroxydicarbonate, not more than 52%, stable dispersion, in water	31A	1250	- 20 °C	- 10 °C